Water and Energy Resource Potential of Ethiopia
Status of Development and Investment Opportunities

Ethiopian Investment Forum 07 June, 2011
Resource Potential

Water Resource Potential

- Intensive study on water resource potential carried out since 1992
- The exploration focused on surface and ground water
- As a result, it is proved that Ethiopia has:
  - 123 Billion cubic meter surface water;
  - 40 billion cubic meter ground water, in the well known 12 river basins
Water Resource Development Activities

Water Supply

- Significant development effort has been started after the downfall of the military regime in 1991.
- The government of Ethiopia, the public and the private sector have engaged in
  a) Studying, design, electro mechanical supply, and construction of water supply
  b) Rehabilitation and maintenance of water supply and sanitation projects,
  c) Capacity building activities
- The introduction of the universal access program has lifted the national clean drinking water access from 18% to 68.5%.
Irrigation Development

In the PASDEP, the achievements are:

- 44,688 ha irrigation scheme construction was completed;
- 457,287 ha feasibility study and design work was completed;
- 178,000 ha of land prefeasibility study completed

Currently, under GTP program:

- 96,085 ha is under construction and;
- 99,722 ha is under study and design;
Irrigation

Using surface water, planned program to be implemented in the growth and transformation period are:

- The study and design work of 267,347 ha, and
- Construction work of 153,630 ha of land.

All these are medium and large scale irrigation projects

- Now using ground water
  a) 5000 ha is under construction;
  b) 50,000 ha is on feasibility and design stage
Opportunities for Investment in the Water Sector

The areas focus particularly on actions to:

- Undertaking construction to make clean water available for drinking and sanitation.
- Undertaking construction to make water available for livestock in pastoralist areas. Extend irrigation for agricultural development to the maximum possible.
- Expand generation capacity to meet hydroelectric power needs;
- Provide water for fisheries and tourism, among other uses.
# Opportunities for Investment in the Water Sector

<table>
<thead>
<tr>
<th>Basin</th>
<th>Irrigation Potentials (ha)</th>
<th>Gross Hydroelectric potential (GWh/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Nile</td>
<td>815,581</td>
<td>78,820</td>
</tr>
<tr>
<td>Tekeze</td>
<td>83,368</td>
<td>5,980</td>
</tr>
<tr>
<td>Baro-Akobo</td>
<td>1,019,523</td>
<td>13,765</td>
</tr>
<tr>
<td>Omo-Ghibe</td>
<td>67,928</td>
<td>36,560</td>
</tr>
<tr>
<td>Rift Valley</td>
<td>139,300</td>
<td>800</td>
</tr>
<tr>
<td>Awash</td>
<td>134,121</td>
<td>4,470</td>
</tr>
<tr>
<td>Genale Dawa</td>
<td>1,074,720</td>
<td>9,270</td>
</tr>
<tr>
<td>Wabi-shebele</td>
<td>237,905</td>
<td>5,440</td>
</tr>
<tr>
<td>Denakil</td>
<td>158,776</td>
<td>----</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,731,222</strong></td>
<td><strong>155,102</strong></td>
</tr>
</tbody>
</table>
## Energy Resource Potential

<table>
<thead>
<tr>
<th>No.</th>
<th>Resource</th>
<th>Exploitable Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Woody Biomass</td>
<td>37 Million ton/year</td>
</tr>
<tr>
<td>2</td>
<td>Crop + animal waste</td>
<td>38 million ton/year</td>
</tr>
<tr>
<td>3</td>
<td>Hydropower</td>
<td>45,000 MW</td>
</tr>
<tr>
<td>4</td>
<td>Solar</td>
<td>5-6 KWh per meter square per day</td>
</tr>
<tr>
<td>5</td>
<td>Wind</td>
<td>10,000 MW</td>
</tr>
<tr>
<td>6</td>
<td>Geothermal</td>
<td>7000 MW</td>
</tr>
<tr>
<td>7</td>
<td>Natural Gas</td>
<td>4 trillion cubic feet</td>
</tr>
<tr>
<td>8</td>
<td>Coal</td>
<td>400 Million ton</td>
</tr>
</tbody>
</table>
Energy Development Activities

- The Government began to launch aggressive power sector development program
- In the strategic period (2004/05-2009/10), implementation of five big hydro power and one wind power projects having a total capacity of 3200 MW were planned
- Three of the hydro plants having a total capacity of 1,200 MW were completed.
- It is planned to increase the existing 2060 MW capacity to 10,000 MW in the next five years and to reach 16,000 MW in the coming ten years.
- Generation mix, which include mainly hydro, wind, geothermal and solar is sought.
- Among the biggest hydropower projects currently under construction are the Gibe III with 1870 MW capacity and the Ethiopian renaissance dam which has a power generation capacity of 5250 MW.
Achievements & the Status of power development program

♦ No. of electrified towns are 5168 from a total of about 7000 rural towns/villages;
♦ Generation capacity 2060 MW
♦ No. of customers are about 1.85 million.
♦ Access to electricity is about 47%;
♦ Per-capita energy consumption is about 100 kwh/year. (500-1000 Kwh/yr is considered the average minimum level of consumption per-capita for reasonable quality of life)
Generated energy (GWh)

- 1991: 1,129
- 1992: 1,147
- 1993: 1,278
- 1994: 1,395
- 1995: 1,452
- 1996: 1,550
- 1997: 1,614
- 1998: 1,689
- 1999: 1,812
- 2000: 2,064
- 2001: 2,316
- 2002: 2,587
- 2003: 2,890
- 2004: 3,332
- 2005: 3,531
- 2006: 3,728

Conti... Achievements & the Status
4/ Continued …Transmission Line (km)
Investment Opportunities in the Energy Sector

**Hydropower**
The available potential which is ready for investment include:
- 173 sites with small scale, 40 MW capacity;
- 25 sites with medium scale, capacity ranging from 41 to 60 MW; and
- 100 sites with large scale, capacity more than 60 MW.

**Wind Energy**
- large part of the potential is yet to be developed.
- The Government will facilitate the condition for any private investor or company interested to invest in this business.
Investment Opportunities in the Energy Sector

Geothermal
The resource is untouched and regarded as the area of better investment opportunity. Currently there are:

a) Four sites each with 100 MWe capacities;
b) One site with 40 MWe capacity; and
c) One site with 60 MWe capacities, ready for private investment. Detail information will be provided for interested and dedicated investors.
Investment Opportunities in the Energy Sector

PV Systems

♦ The country has high potential resource
♦ the government is committed to facilitate the investment of PV technologies, because
♦ it is suitable for small scale energy provision, especially for/in remote rural areas like Ethiopia where 80% of the population is residing in rural areas.
♦ it has numerous environmental benefits as it is a clean energy technology.
♦ it helps to create jobs and strengthen the economy, because it is young and high-tech industry.
♦ Today, many private sector, cooperatives and community based organizations are involved in development activities, and still wide range of opportunity that can accommodate more investors is available.
Investment Opportunities in the Energy Sector

Biomass Technology

- Efficient end use devices such as cook stoves which use solid biomass and
- the liquid biomass stoves like ethanol stove are highly needed by both rural and urban population.
- Because of their potential in conserving fuel, the efficient stoves have a wide market and their dissemination is highly encouraged by the Government,
- Private sector investment in introducing and disseminating efficient stoves is a rewarding investment opportunity in Ethiopia
Investment Opportunities in the Energy Sector

Bio-ethanol Investment Opportunity

♦ Ethiopia has vast area of land that suite the development of ethanol feed stocks

♦ There is earlier identified 700,000 ha suitable land for sugar cane plantation,

♦ There is an additional 388,000 hectares that could be put under immediate sugarcane development.

♦ In all the regional States there yet exist an area of approximately 10 million hectares suitable for both perennial and annual crops
The investment laws of Ethiopia encourage both local and foreign investment in the sector. They provide several incentives only few of which are:

- Right to sell the produced product, without obtaining other licenses;
- Exemption from customs duties and taxes on equipment, machinery, vehicles and spare parts necessary for exploration and development;
- Dispute settlement mechanisms as agreed between the government and the licensee;
- Generous deductions and calculations of expenditure; reinvestment deduction;
- Write off of investment within reasonable time;
- Low royalty and tax rate;
- No restrictions on repatriation of profits and dividends in the currency of investment or in an approved currency;
- The right to hold a foreign currency account in Ethiopia.